Soliton Spin in an Add-Drop Optical Filter for Long Distance Spin Transport

Abstract

A new concept of an optical spin generation using bright and dark soliton conversion behaviors within a modi¯ed optical add drop ¯lters known as a PANDA ring resonator is proposed. The orthogonal solitons can be formed randomly within the system and detected simultaneously at the output ports. Under the resonant condition, the orthogonal solitons corresponding to the lefthand and right-hand solitons (photons) can be generated. Whenever a photon is absorbed by an object, an angular momentum of either þ} or } is imparted to the object, in which two possible spin states known as soliton spins are exhibited. Many soliton spins, i.e., many particles, dynamic spin and long distance spin transport using the proposed design are also discussed.